

(FILE 'USPAT' ENTERED AT 17:38:54 ON 30 JUL 1997)

L1	166 S LAMINARIN?
L2	405 S GLUCANASE#
L3	36 S L2 (10A) L1
L4	101 S "BETA-1,6"
L5	405 S GLUCANASE#
L6	5 S L4 (5A) L5
L7	119 S LAMINARIN
L8	34 S L7 AND L2
L9	7 S L7 (10A)

(FILE 'USPAT' ENTERED AT 16:52:33 ON 30 JUL 1997)

L1 405 S GLUCANASE#
L2 21783 S YEAST#

(FILE 'HOME' ENTERED AT 09:25:09 ON 31 JUL 1997)

FILE 'REGISTRY' ENTERED AT 09:25:32 ON 31 JUL 1997

L1 1 S GLUCANASE/CN
L2 563 S GLUCANASE
L3 0 S .BETA.1,6 GLUCANASE
L4 1 S .BETA.1,6
L5 1 S BETA 1,6 GLUCANASE
SEL L5
L6 18 S BETA 1,3 GLUCAN
L7 0 S BETA 1,3 GLUCAN/CN
L8 1 S LAMINARIN/CN
SEL L8

FILE 'CA, BIOSIS, USPATFULL, WPIDS' ENTERED AT 09:36:08 ON 31 JUL 1997

L9 88 FILE CA
L10 34 FILE BIOSIS
L11 7 FILE USPATFULL
L12 16 FILE WPIDS
TOTAL FOR ALL FILES
L13 145 S E1-E3
L14 899 FILE CA
L15 552 FILE BIOSIS
L16 53 FILE WPIDS
TOTAL FOR ALL FILES
L17 1504 S E4-E7
L18 18 FILE CA
L19 7 FILE BIOSIS
L20 0 FILE WPIDS
TOTAL FOR ALL FILES
L21 25 S L17 AND L13

FILE 'CA, BIOSIS, USPATFULL, WPIDS' ENTERED AT 09:57:05 ON 31 JUL 1997

L22 18 FILE CA
L23 7 FILE BIOSIS
L24 1 FILE USPATFULL
L25 0 FILE WPIDS
TOTAL FOR ALL FILES
L26 26 S L21
L27 20 DUP REM L26 (6 DUPLICATES REMOVED)

=> d ibib ab 1-20

L27 ANSWER 1 OF 20 CA COPYRIGHT 1997 ACS
ACCESSION NUMBER: 127:62983 CA
TITLE: Effect of carbon source on extracellular
(1.fwdarw.3)- and (1.fwdarw.6)-.beta.-glucanase
production by Acremonium persicinum
AUTHOR(S): Pitson, Stuart M.; Seviour, Robert J.;
Mcdougall, Barbara M.
CORPORATE SOURCE: Biotechnology Research Centre, La Trobe
University Bendigo, Victoria, 3550, Australia
SOURCE: Can. J. Microbiol. (1997), 43(5), 432-439
CODEN: CJMIAZ; ISSN: 0008-4166
PUBLISHER: National Research Council of Canada

DOCUMENT TYPE: Journal
LANGUAGE: English

AB The effect of carbon source on the levels of three (1.fwdarw.3)-.beta.-glucanases and a (1.fwdarw.6)-.beta.-glucanase in the culture filtrates of the filamentous fungus *Acremonium persicinum* was investigated. All four enzymes were produced during growth of the fungus on (1.fwdarw.3)-, (1.fwdarw.6)-, and (1.fwdarw.3)(1.fwdarw.6)-.beta.-glucans as well as .beta.-linked oligoglucosides. However, only one (1.fwdarw.3)-.beta.-glucanase and the (1.fwdarw.6)-.beta.-glucanase were detected during growth on a range of other carbon sources including glucose, CM-cellulose, and the .alpha.-glucan pullulan. The presence of glucose in the medium markedly decreased the prodn. of all four glucanases, although the concn. required to effect complete repression of enzyme levels varied for the different enzymes. Similar repressive effects were also obsd. with sucrose, fructose, and galactose. The most likely explanations for these observations are that the synthesis of the (1.fwdarw.6)-.beta.-glucanase and one of the (1.fwdarw.3)-.beta.-glucanases is controlled by carbon catabolite repression, while the remaining two (1.fwdarw.3)-.beta.-glucanases are inducible enzymes subject to carbon catabolite repression.

L27 ANSWER 2 OF 20 CA COPYRIGHT 1997 ACS

ACCESSION NUMBER: 126:222711 CA

TITLE: Production of .beta.-glucan degrading enzymes by *Acremonium* and *Cephalosporium* species

AUTHOR(S): Pitson, S. M.; Seviour, R. J.; Mcdougall, B. M.

CORPORATE SOURCE: Biotechnology Research Centre, La Trobe University, Victoria, 3550, Australia

SOURCE: Mycol. Res. (1997), 101(2), 153-158

CODEN: MYCRER; ISSN: 0953-7562

PUBLISHER: Cambridge University Press

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Thirty-one isolates of the form genera *Acremonium* and *Cephalosporium* were screened for their ability to excrete enzymes capable of degrading .beta.-glucans. Most produced both (1.fwdarw.3)- and (1.fwdarw.6)-.beta.-glucanases together, although the yields varied with carbon source used. Surprisingly, higher yields of (1.fwdarw.3)-.beta.-glucose were often seen from isolates grown on pustulan, a (1.fwdarw.6)-.beta.-glucan which is not hydrolyzed by these enzymes. Lower enzyme yields were generally obtained with glucose than with either laminarin, a (1.fwdarw.3)-.beta.-glucan or pustulan as carbon sources, suggesting regulation of synthesis by either catabolite repression and/or induction. However, a few isolates, most notably *Cephalosporium* sp. OXF C13 and *Acremonium strictum* appeared to have some constitutive-.beta.-glucanase activity. Most of the isolates screened were only very weakly cellulolytic against CM-cellulose or filter paper as substrates.

L27 ANSWER 3 OF 20 CA COPYRIGHT 1997 ACS

ACCESSION NUMBER: 124:312149 CA

TITLE: Glucanolytic Actinomycetes antagonistic to *Phytophthora fragariae* var. *rubi*, the causal agent of raspberry root rot

AUTHOR(S): Valois, Diane; Fayad, Karine; Barasubiye, Tharcisse; Garon, Marie; Dery, Claude;

CORPORATE SOURCE: Brzezinski, Ryszard; Beaulieu, Carole
Group Recherche Biologie Actinomycetes,
Universite de Sherbrooke, Sherbrooke, PQ, J1K 2R1, Can.

SOURCE: Appl. Environ. Microbiol. (1996), 62(5), 1630-1635

CODEN: AEMIDF; ISSN: 0099-2240

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A collection of about 200 actinomycete strains was screened for the ability to grow on fragmented *Phytophthora* mycelium and to produce metabolites that inhibit *Phytophthora* growth. Thirteen strains were selected, and all produced .beta.-1,3-, .beta.-1,4-, and .beta.-1,6-glucanases. These enzymes could hydrolyze glucans from *Phytophthora* cell walls and cause lysis of *Phytophthora* cells. These enzymes also degraded other glucan substrates, such as cellulose, **laminarin**, pustulan, and yeast cell walls. Eleven strains significantly reduced the root rot index when inoculated on raspberry plantlets.

L27 ANSWER 4 OF 20 CA COPYRIGHT 1997 ACS DUPLICATE 1

ACCESSION NUMBER: 125:52101 CA

TITLE: Purification and characterization of an extracellular (1.fwdarw. 6)-.beta.-glucanase from the filamentous fungus *Acremonium persicinum*

AUTHOR(S): Pitson, Stuart M.; Seviour, Robert J.; McDougall, Barbara M.; Stone, Bruce A.; Sadek, Maruse

CORPORATE SOURCE: Biotechnol. Res. Cent., La Trobe Univ. Bendigo, Bendigo, 3550, Australia

SOURCE: Biochem. J. (1996), 316(3), 841-846
CODEN: BIJOAK; ISSN: 0264-6021

DOCUMENT TYPE: Journal

LANGUAGE: English

AB An endo-1,6-.beta.-glucanase

(I) was isolated from the culture filtrates of *A. persicinum* and purified by (NH₄)₂SO₄ pptn. followed by anion-exchange and gel-filtration chromatog. SDS-PAGE of purified I gave a single band with an apparent mol. wt. of 42.7 kDa. I was a nonglycosylated, monomeric protein with a pI of 4.9 and pH optimum of 5.0. I hydrolyzed (1.fwdarw. 6)-.beta.-glucans (pustulan and lutean), initially yielding a series of (1.fwdarw. 6)-.beta.-linked oligoglucosides, consistent with endohydrolytic action. Final hydrolysis products from these substrates were gentiobiose and gentiotriose, with all products released as .beta.-anomers, indicating that the enzyme acts with retention of configuration. Purified I also hydrolyzed *Eisenia bicyclis* **laminarin**, liberating glucose, gentiobiose, and a range of larger oligoglucosides, through the apparent hydrolysis of (1.fwdarw. 6)-.beta.- and some (1.fwdarw. 3)-.beta.-linkages in this substrate. The Km values for pustulan, lutean, and **laminarin** were 1.28, 1.38, and 1.67 mg/mL, resp. I was inhibited by N-acetylimidazole, N-bromosuccinimide, dicyclohexylcarbodiimide, Woodward's Regent K, 2-hydroxy-5-nitrobenzyl bromide, KMnO₄, and some metal cations; however, D-glucono-1,5-lactone and EDTA had no effect.

L27 ANSWER 5 OF 20 CA COPYRIGHT 1997 ACS DUPLICATE 2

ACCESSION NUMBER: 123:79314 CA

TITLE: Characteristics and role of .beta.-glucanase enzymes associated with blastospore formation in *Saccharomycopsis fibuligera* NCYC 451

AUTHOR(S): Mulenga, D. K.; Berry, D. R.

CORPORATE SOURCE: Dep. Bioscience and Biotechnology, Univ. Strathclyde, Scotland, UK

SOURCE: Microbios (1995), 82(331), 75-86
CODEN: MCBIA7; ISSN: 0026-2633

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The .beta.-glucanase activities present in cell-free medium during growth and blastospore formation by *Saccharomycopsis fibuligera* were

monitored. The **.beta.-1,3-** and **.beta.-1,6-glucanase** activities increased at the time of blastospore formation. These enzymes were characterized using DEAE Sepharose and gel filtration through a Sephacryl S-300 column. The **.beta.-1,3-** and **.beta.-1,6-glucanase** activities give sep. peaks both by ion exchange chromatog. and by gel filtration indicating the presence of at least two sep. enzymes. The **.beta.-1,6-glucanase** had a mol. wt. of 43 kD by gel filtration, whereas the **.beta.-1,3-glucanase** gave two peaks at 150 and 280 kD. Both **.beta.-1,3-glucanase** peaks were active against **laminarin**, but only the 280 kD fraction was active against p-nitrophenylglucoside. It was not possible to break down either mycelial or blastospore cell wall material using these enzymes either singly or in combination, although some release of glucose and reducing sugar was obsd.

L27 ANSWER 6 OF 20 CA COPYRIGHT 1997 ACS DUPLICATE 3
 ACCESSION NUMBER: 122:53919 CA
 TITLE: Specificity of a **.beta.-glucan** receptor on macrophages from Atlantic salmon (*Salmo salar* L.)
 AUTHOR(S): Engstad, Rolf E.; Robertsen, Boerre
 CORPORATE SOURCE: The Norwegian College of Fishery Science, University of Tromso, Tromso, N-9037, Norway
 SOURCE: Dev. Comp. Immunol. (1994), 18(5), 397-408
 CODEN: DCIMDQ; ISSN: 0145-305X
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB This study was undertaken to study the specificity of a **.beta.-glucan** receptor on Atlantic salmon macrophages. Previous in vitro studies have shown that Atlantic salmon macrophages express a receptor that rapidly recognizes and mediates uptake of nonopsonized **.beta.-glucan** particles. The ingestion of particles was shown to be inhibited by preincubating the macrophages with glucans contg. **.beta.-1,3-linkages**, but not by glucans contg. other linkages. Small oligomers from formolyzed **.beta.-glucan** particles, and linear **.beta.-1,3-linked** oligomers with a d.p. (DP) ≥ 3 , were efficient inhibitors of uptake of glucan particles. Oligomers from **.beta.-1,6-linked** pustulan, or small size oligomers with linkages other than **.beta.-1,3**, were not able to inhibit uptake of glucan particles. The inhibitory effect of **laminarin** and laminariheptaose was abolished by degrading the nonreducing terminal ends by sodium periodate treatment. The inhibitory effect of **laminarin** was regained by a complete Smith degrading; i.e., periodate oxidn. followed by redn. and hydrolysis. Modification of the reducing end of laminariheptaose had no effect on its ability to inhibit uptake. Furthermore, it was shown that periodate-oxidized glucan particles were not taken up by salmon macrophages, and that the uptake was regained when the particles were hydrolyzed to recover the nonreducing terminal end. Lastly, it was shown that endo-**.beta.-1,6-glucanase** treatment of the yeast glucan particles did not reduce uptake, confirming that **.beta.-1,6-linkages** are not involved in the recognition. These results suggest that Atlantic salmon macrophages possess a receptor that may recognize even very short **.beta.-1,3-linked** glucosyl chains extending from yeast cell walls.

L27 ANSWER 7 OF 20 CA COPYRIGHT 1997 ACS
 ACCESSION NUMBER: 122:181678 CA
 TITLE: Isolation and characterization of a unique endo-**.beta.-1,6-glucanase** from the yeast *Saccharomycopsis fibuligera* NCYC 451
 AUTHOR(S): Mulenga, D. K.; Berry, D. R.

CORPORATE SOURCE: Dep. Biosci. Biotechnol., Univ. Strathclyde,
Glasgow, G1 1XW, UK
SOURCE: Microbios (1994), 80(324), 143-54
CODEN: MCBIA7; ISSN: 0026-2633
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A .beta.-glucanase enzyme has been described which has .beta.-1,6
activity but no .beta.-1,3 activity. It was isolated and purified
from cell free ext. and culture free medium of *Saccharomycopsis*
fibuligera by a combination of techniques that included adsorption
on DEAE-Sephacryl and gel filtration through a Sephacryl S-300
column. The extracellular endo-.beta.-1,
6-glucanase had similar physicochem. properties to
those of the intracellular one. The intracellular enzyme behaved as
an acidic protein with pI 3.95. It had an optimum pH of 5.5 and
optimum temp. of 50.degree.. The enzyme was specific for
.beta.-1,6-glucosidic linkages by an endo-acting mechanism. The
mol. wt. of the intracellular enzyme was estd. at 51 kDa from gel
filtration compared with 43 kDa for the extracellular enzyme.

L27 ANSWER 8 OF 20 CA COPYRIGHT 1997 ACS DUPLICATE 4
ACCESSION NUMBER: 120:318103 CA
TITLE: Production, purification, and characterization
of an extracellular endo-.beta.-1,3-glucanase
from a monokaryon of *Schizophyllum commune* ATCC
38548 defective in exo-.beta.-1,3-glucanase
formation
AUTHOR(S): Prokop, Andreas; Rapp, Peter; Wagner, Fritz
CORPORATE SOURCE: Inst. Biochem. Biotechnol., Tech. Univ.
Braunschweig, Braunschweig, D-3300, Germany
SOURCE: Can. J. Microbiol. (1994), 40(1), 18-23
CODEN: CJMIAZ; ISSN: 0008-4166
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Prodn. of extracellular .beta.-1,3-glucanase activity by a
monokaryotic *Schizophyllum commune* strain was monitored and results
indicated that the .beta.-glucanase activity consisted of an
endo-.beta.-1,3-glucanase activity, besides a negligible amt. of
.beta.-1,6-glucanase and
.beta.-glucosidase activity. Unlike the .beta.-1,3-glucanase prodn.
of the dikaryotic parent strain *S. commune* ATCC 38548, the
.beta.-1,3-glucanase formation of the monokaryon was not regulated
by catabolite repression. The endo-.beta.-1,3-glucanase of the
monokaryon was purified from the culture filtrate by lyophilization,
anion exchange chromatog. on Mono Q, and gel filtration on Sephacryl
S-100. It appeared homogeneous on SDS-PAGE with a mol. mass of 35.5
kDa and isoelec. point was 3.95. The enzyme was only active toward
glucans contg. .beta.-1,3-linkages, including lichenan, a
.beta.-1,3-1,4-D-glucan. It attacked **laminarin** in an
endo-like fashion to form laminaribiose, laminaritriose, and high
oligosaccharides. While the extracellular .beta.-glucanases from
the dikaryotic *S. commune* ATCC 38548 degraded significant amts. of
schizophyllan, the endo-.beta.-1,3-glucanase from the monokaryon
showed greatly reduced activity toward this high mol. mass
.beta.-1,3-/.beta.-1,6-glucan. The Km of the endoglucanase, using
laminarin as substrate, was 0.28 mg/mL. Optimal pH and
temp. were 5.5 and 50 .degree.C, resp. The enzyme was stable
between pH 5.5 and 7.0 and at temps. below 50 .degree.C. The enzyme
was completely inhibited by 1 mM Hg2+. Growth of the monokaryotic
S. commune strain was not affected by its constitutive
endo-.beta.-1,3-glucanase formation.

L27 ANSWER 9 OF 20 CA COPYRIGHT 1997 ACS
ACCESSION NUMBER: 119:155803 CA
TITLE: Regulation of .beta.-1,3-glucanase synthesis in

Trichoderma harzianum
AUTHOR(S): Rudawska, Maria; Kamoen, Oswal
CORPORATE SOURCE: Inst. Dendrol., Pol. Acad. Sci., Kornik, 62-035,
Pol.
SOURCE: Arbor. Kornickie (1992), 37, 51-9
CODEN: ARKOA9; ISSN: 0066-5878
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The antagonistic fungus *T. harzianum* when grown in a synthetic liq. medium produced enzymes with high .beta.-1,3- and low .beta.-1,6-glucanase activity. The enzymes were sepd. by Sephacryl-S 200 column chromatog. The .beta.-1,3-glucanase of *T. harzianum* appears to be subjected to a dual regulation, viz., catabolic repression and substrate induction. Glucose had a repressive effect on .beta.-1,3-glucanase activity when the fungus was incubated in a high glucose medium. After removal into a low glucose medium, the catabolic repression persisted for several days. Substrate induction in the culture of *T. harzianum* may be evoked by an exogenously supplied glucan, **laminarin**. **Laminarin** stimulated glucanase prodn. only when glucose was completely exhausted. The results are discussed in the context of better understanding of glucanase regulation, which may be helpful for increasing enzyme activity and antagonistic capacity of *Trichoderma* spp.

L27 ANSWER 10 OF 20 CA COPYRIGHT 1997 ACS

ACCESSION NUMBER: 115:131617 CA
TITLE: Biosynthesis of .beta.-glucanase by marine bacterium *Cytophaga*
AUTHOR(S): Kondrat'eva, L. M.; Vakhrusheva, E. V.
CORPORATE SOURCE: Inst. Water Ecol. Probl., Khabarovsk, USSR
SOURCE: Mikrobiol. Zh. (Kiev) (1991), 53(1), 53-8
CODEN: MZHUDX; ISSN: 0201-8462

DOCUMENT TYPE: Journal
LANGUAGE: Russian

AB **1,6-.beta.-Glucanase** has been isolated from *Cytophaga* sp. NK-5. **Laminarin** (1,3; 1,6-.beta.-glucan) and pustulan (1,6-.beta.-glucan) were used as a source of carbon. The enzyme activity has been shown to depend on conditions of cultivation (glucan structure, peptone content in nutrient medium). It is detd. that the max. glucanase activity is developed under conditions similar to those in sea water or in the medium contg. 3% marine salt. Although the largest yield of bacterial biomass has been obsd. at 25.degree., the temp. optimum of the enzyme activity was at 50.degree.. The enzyme activity grew in the alk. zone of pH and also in the presence of 1 mM Ca²⁺ and Mg²⁺ ions, while Hg⁺, Pb⁺ and Fe³⁺ ions of the same concns. inhibited it.

L27 ANSWER 11 OF 20 CA COPYRIGHT 1997 ACS

ACCESSION NUMBER: 112:33586 CA
TITLE: Distribution of some glucanases in marine invertebrates
AUTHOR(S): Sundukova, E. V.; Elyakova, L. A.
CORPORATE SOURCE: Lab. Enzyme Chem., Pac. Inst. Bioorg. Chem., Vladivostok, 690032, USSR
SOURCE: Biol. Morya (Vladivostok) (1989), (4), 78-80
CODEN: BIMOD4; ISSN: 0320-9695

DOCUMENT TYPE: Journal
LANGUAGE: Russian

AB Exts. of organs (stomach, liver, and cryst. style) of >130 different marine invertebrates, mainly Mollusca, were examd. for their ability to split (1.fwdarw.3)- and (1.fwdarw.6)-.beta.-glucans, mixed (1.fwdarw.3), (1.fwdarw.4)- and (1.fwdarw.3), (1.fwdarw.6)-.beta.-glucans, and (1.fwdarw.3), (1.fwdarw.4)-.beta.-xylan. Exts. from arthropod digestive tract were active on the glucan substrates

pachyman, aubazide, yeast glucan, and lichenan substrates, but not on laminaran or xylan, whereas mollusk exts. were most active on laminaran, pachyman, and lichenan substrates.

L27 ANSWER 12 OF 20 CA COPYRIGHT 1997 ACS

ACCESSION NUMBER: 102:2964 CA

TITLE: Synthesis and regulation of Bacillus circulans WL-12 1,3-.beta.-D-glucanases

AUTHOR(S): Esteban, Rosa; Nebreda, Angel R.; Villa, Tomas G.

CORPORATE SOURCE: Fac. Biol., Univ. Salamanca, Salamanca, Spain

SOURCE: J. Gen. Microbiol. (1984), 130(10), 2483-7

CODEN: JGMIAN; ISSN: 0022-1287

DOCUMENT TYPE: Journal

LANGUAGE: English

AB B. circulans WL-12 1,3-.beta.-D-glucanases are extracellular enzymes subject to catabolite repression by glucose and synthesized after the depletion of this sugar. Utilization of other complex C sources (1,3-.beta.-D-glucan from bakers' yeast, laminarin, or xylan) resulted in a 3-4-fold increase in the formation of these enzymes, suggesting that they are derepressible and inducible. Under induction conditions 4 different enzymes were detected by isoelec. focusing that were numbered I, II, III, and IV, according to their isoelec. points (3.7, 4.6, 5.5, and 6.5 resp.). Glucanase II was inducible whereas I, III, and IV were both derepressible and inducible. In addn., the synthesis of glucanase II was blocked by cyclic AMP. The 4 enzyme forms displayed an endo-attack on laminarin and yielded similar products, but differed in some physicochem. parameters such as mol. wt., Km, and lytic activity.

L27 ANSWER 13 OF 20 CA COPYRIGHT 1997 ACS

DUPLICATE 5

ACCESSION NUMBER: 94:43818 CA

TITLE: Distribution of .beta.-glucanases within the genus Bacillus

AUTHOR(S): Martin, D. F.; Priest, F. G.; Todd, C.; Goodfellow, M.

CORPORATE SOURCE: Dep. Brew. Biol. Sci., Heriot-Watt Univ., Edinburgh, EH1 1HX, Scot.

SOURCE: Appl. Environ. Microbiol. (1980), 40(6), 1136-8

CODEN: AEMIDF; ISSN: 0099-2240

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Some 368 strains from 36 species of Bacillus were screened for the secretion of .beta.-glucanases. The (1.fwdarw.6)-.beta.-glucanases active on pustulan were produced by a minority of the organisms studied (4%), but (1.fwdarw.3)-.beta.-glucanases, which hydrolyzed laminarin and pachyman, were secreted by 56 and 44% of the strains, resp.

L27 ANSWER 14 OF 20 CA COPYRIGHT 1997 ACS

ACCESSION NUMBER: 91:54587 CA

TITLE: Immobilization of lytic enzymes and their application in the lysis of yeast cells

AUTHOR(S): Galas, E.; Bielecki, S.; Antczak, T.

CORPORATE SOURCE: Inst. Tech. Biochem., Lodz Tech. Univ., Lodz, PL-90-924, Pol.

SOURCE: Prepr. - Eur. Congr. Biotechnol., 1st (1978), 118-22. DECHEMA: Frankfurt/Main, Ger.

CODEN: 40SBAD

DOCUMENT TYPE: Conference

LANGUAGE: English

AB The lysis of viable cells of Saccharomyces cerevisiae, S. carlsburgensis, and dried or viable cells of Candida utilis by lytic enzymes produced by Streptomyces species 1228 was investigated. The enzymes included 2 .beta.-1,3-glucanases, a .beta.-

1,6-glucanase, and a protease and were immobilized in a collagen membrane. With buffered laminarin or C. utilis cells as substrates, the best activities of the lytic enzyme-collagen complexes were obsd. after 3-fold impregnation of the collagen membrane in the enzyme soln. Treatment of the complex with 10% glutaraldehyde soln. or UV irradiation had a positive effect on immobilized enzyme activity and stability. Use of the enzyme-collagen membrane in a biocatalytic reactor made possible the continuous hydrolysis of laminarin and yeast cells for up to 3 wk.

L27 ANSWER 15 OF 20 BIOSIS COPYRIGHT 1997 BIOSIS

ACCESSION NUMBER: 77:217000 BIOSIS

DOCUMENT NUMBER: BA64:39364

TITLE: LAMINARINASE EC-3.2.1.6

BETA GLUCANASE ACTIVITY IN

BACTEROIDES FROM THE HUMAN COLON.

AUTHOR(S): SALYERS A A; PALMER J K; WILKINS T D

SOURCE: APPL ENVIRON MICROBIOL 33 (5). 1977 1118-1124.

CODEN: AEMIDF ISSN: 0099-2240

LANGUAGE: Unavailable

AB Laminarin, a .beta.(1 .fwdarw. 3)-glucan similar to those found in plant cell walls, is fermented by some species of anaerobic bacteria from the human colon. Laminarinase (EC 3.2.1.6) and .beta.-glucosidase (EC 3.2.1.21) activities were determined in strains representing B. thetaiotaomicron, B. distasonis, and an unnamed DNA homology group of B. fragilis. In all 3 spp., laminarinase activity was inducible by laminarin and was predominantly cell bound. The products of laminarinase activity varied with each species. In the case of B. thetaiotaomicron, the major product of laminarin hydrolysis was glucose (70-90%), and there were small amounts of laminaribiose (G2) and oligomers of glucose as high as G4. In the case of group 0061-1, glucose (40-50%) and oligomers of glucose as high as G6 were found. The laminarinase of B. distasonis differed from the laminarinases of the other 2 spp. in that it mainly produced oligomers of glucose (G2-G5). .beta.-Glucosidase activity was also found in all 3 spp. .beta.-Glucosidase was induced by glucose-containing disaccharides and by laminarin. The .beta.-glucosidases of the 3 Bacteroides spp. differed in the level of activity, induction pattern and sensitivity to inhibition by D-glucono-1,5-lactone.

L27 ANSWER 16 OF 20 CA COPYRIGHT 1997 ACS

DUPLICATE 6

ACCESSION NUMBER: 86:68198 CA

TITLE: Production and catabolite repression of Penicillium italicum .beta.-glucanases

AUTHOR(S): Santos, Tomas; Villanueva, Julio R.; Nombela, Cesar

CORPORATE SOURCE: Fac. Sci., Univ. Salamanca, Salamanca, Spain

SOURCE: J. Bacteriol. (1977), 129(1), 52-8

CODEN: JOBAAY

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The filamentous fungus P. italicum, grown in a defined liq. medium, produced .beta.-1,3-glucanase, which remained essentially bound to the cells, and .beta.-1,6-glucanase, an essentially extracellular enzyme. When glucose was depleted from the medium, when a limited concn. of glucose (0.2%) was maintained, or when the C source was galactose (3%) or lactose (3%), a significant increase in the sp. activity of .beta.-1,3-glucanase in cell exts. took place. This was paralleled by a very slow rate of growth, and under glucose limitation, the appearance of .beta.-1,3-glucanase in the medium was also obsd. On the other hand, when an excess of glucose, fructose, or sucrose was present, the sp. activity remained const. and active growth was

promoted. Laminarin, cellobiose, gentiobiose, and isolated P. italicum walls did not significantly induce .beta.-1,3-glucanase synthesis to a level beyond that attained by glucose limitation. A similar behavior was obsd. for .beta.-1,6-glucanase. .beta.-1,3-Glucanase and .beta.-1,6-glucanase are therefore constitutive enzymes subjected to catabolite repression. The results are discussed in the context of the possible functions that have been suggested for glucanases and related enzymes.

L27 ANSWER 17 OF 20 CA COPYRIGHT 1997 ACS

ACCESSION NUMBER: 84:146640 CA

TITLE: Lysis of yeast cell walls. Lytic .beta.-(1 .fwdarw. 6)-glucanase from Bacillus circulans WL-12

AUTHOR(S): Rombouts, Frank M.; Phaff, Herman J.

CORPORATE SOURCE: Dep. Food Sci. Technol., Univ. California, Davis, Calif., USA

SOURCE: Eur. J. Biochem. (1976), 63(1), 109-20

CODEN: EJBCAI

DOCUMENT TYPE: Journal

LANGUAGE: English

AB When grown in a mineral medium with yeast cell walls or yeast glucan as the sole C source, Bacillus circulans WL-12 produces wall-lytic enzymes in addn. to non-lytic .beta.-(1 .fwdarw. 3)- and .beta.-(1 .fwdarw. 6)-glucanases. The lytic enzyme were isolated from the culture liq. by adsorption on insol. yeast glucan in batch operation. After digestion of the glucan, the mixt. of enzymes was chromatographed on hydroxylapatite on which the lytic activity could be resolved into 1 lytic .beta.-(1 .fwdarw. 6)-glucanase and 2 lytic .beta.-(1 .fwdarw. 3)-glucanases. The lytic .beta.-(1 .fwdarw. 6)-glucanase was further purified by chromatog. over DEAE-agarose and CM-cellulose. Its specific activity on pustulan was 6.2 units/mg of protein. The enzyme moved as a single protein with a mol. wt. of 54,000 during Na dodecyl sulfate electrophoresis in slab gels. Hydrolysis of pustulan went through a series of oligosaccharides, leading to a mixt. of gentiotriose, gentiobiose, and glucose. The enzyme also produced small amts. of gentiobiose from laminarin and pachyman and on this basis its lytic activity on yeast cell walls was attributed to a debranching of the alkali-insol. .beta.-(1 .fwdarw. 3)-glucan in the wall. Low-mol.-wt. products from yeast cell walls included gentiotriose, gentiobiose and glucose but .beta.-(1 .fwdarw. 3)-linked oligosaccharides were not detected. The lytic .beta.-(1 .fwdarw. 6)-glucanase had an optimum pH of 6.0. Pustulan hydrolysis followed Michaelis-Menten kinetics. A Km of 0.29 mg pustulan/ml and a V of 9.1 microequivalents of glucose released min/mg of enzyme were calcd. The enzyme had no metal ion requirement. The lytic .beta.-(1 .fwdarw. 6)-glucanase differs in essence from the non-lytic .beta.-(1 .fwdarw. 6)-glucanase of the same organism by its pos. action on yeast cell walls and yeast glucan and its much lower specific activity on sol. pustulan.

L27 ANSWER 18 OF 20 CA COPYRIGHT 1997 ACS

ACCESSION NUMBER: 83:24853 CA

TITLE: Production of yeast lytic enzymes by a strain belonging to the genus Oerskovia. II. Culture conditions for the production of yeast lytic enzymes from Oerskovia species CK and some properties of the crude enzymes

AUTHOR(S): Obata, Takaji; Yamashita, Koichi; Nunokawa, Yataro

CORPORATE SOURCE: Natl. Res. Inst. Brew., Tokyo, Japan

SOURCE: Hakko Kogaku Zasshi (1975), 53(5), 256-63

CODEN: HKZAA2

DOCUMENT TYPE: Journal
LANGUAGE: Japanese

AB The culture filtrate of the CK strain of Oerskovia, exhibited high lytic activity toward logarithmic or stationary phase cells of many species of yeast, when the yeast cells were used as substrate. Culturing conditions of the CK strain giving the optimum prodn. of the cell wall lytic enzyme were investigated. It was found that glucan, the main component of yeast cell wall, and **laminarin** whose structure is similar to glucan, were effective inducers of enzyme prodn. Addn. of NaNO₃, KNO₃, or (NH₄)₂HPO₄ to the medium promoted the enzyme prodn., owing to maintenance of the broth pH around neutrality. The enzyme prodn. was also enhanced when the medium was sterilized at pH 11.0 and readjusted to pH 7.0. This enzyme prepn. showed .beta.-1,3-glucanase, .beta.-1,6-glucanase, mannanase, protease and amylase activities. Optimum pH and temp. of the lytic activity were 6.0-9.0 and 30-40.degree., resp. This lytic activity was stable at pH 6.0-10.0, but was completely lost on treatment at 50.degree. for 15 min. The activity was also severely inhibited by 10-4M HgCl₂.

L27 ANSWER 19 OF 20 USPTAFULL

ACCESSION NUMBER: 73:7055 USPTAFULL
TITLE: LYSIS OF YEAST CELL WALLS
INVENTOR(S): Kitamura, Kunpei, Takasaki-shi, Japan
Kaneko, Tatsuhiko, Takasaki-shi, Japan
Yamamoto, Yasushi, Takasaki-shi, Japan
Kuroiwa, Yoshiro, Takasaki-shi, Japan
PATENT ASSIGNEE(S): Kirin Beer Kabushiki Kaisha, a.k.a., Kirin
Brewery Co., Ltd., Tokyo, Japan (non-U.S.
corporation)

	NUMBER	DATE
PATENT INFORMATION:	US 3716452	730213
APPLICATION INFO.:	US 70-73061	700917 (5)
DOCUMENT TYPE:	Utility	
PRIMARY EXAMINER:	Shapiro, Lionel M.	
LEGAL REPRESENTATIVE:	Holman & Stern	
NUMBER OF CLAIMS:	16	
LINE COUNT:	568	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB An enzyme which is capable of lysing yeast cell walls is produced by microorganisms belonging to *Arthrobacter luteus* nov. sp. The enzyme has a unique activity for lysing cell walls of yeast dead or alive and in any stage of growth.

L27 ANSWER 20 OF 20 CA COPYRIGHT 1997 ACS

ACCESSION NUMBER: 70:54375 CA
TITLE: Enzymic hydrolysis of yeast cell walls. II.
Purification of lytic enzymes
AUTHOR(S): Kuroda Akio; Tawada, Noriko; Tokumaru, Yoko
CORPORATE SOURCE: Kinki Yakult Mfg. Co., Nishinomiya, Japan
SOURCE: Hakko Kogaku Zasshi (1968), 46(11), 930-7
CODEN: HKZAA2
DOCUMENT TYPE: Journal
LANGUAGE: Japanese

AB An enzyme (I) which hydrolyzes yeast cell walls was obtained from the fungus *Rhizopus* and chromatog. purified by DEAE-Sephadex and CM-cellulose. In addn., .beta.-1,3-glucanase and .beta.-1,6-glucanase were sepd. by CM-cellulose chromatog. .beta.-1,3-Glucanase hydrolyzed **laminarin** to glucose by a random mechanism. .beta.-1,6-Glucanase hydrolyzed luteose almost completely to gentiobiose. I hydrolyzed both acetone-dried and heat-treated yeast cells. Neither .beta.-1,3-glucanase nor protease was

hydrolytic alone against yeast cells harvested in the logarithmic phase and treated with cysteine, but either was able to hydrolyze the yeast cells when combined with **.beta.-1**,